SERVICE MANUAL

NAD

SERVICE SAFETY PRECAUTIONS (UL)

1. Use exact replacement parts for critical locations marked "⚠"
2. Return lead dress to original position and re-install protective covers.
3. Before returning to customer, test for shock hazard; use either mothod A or B:

A. Leakage test "cold":
   1. Unplug the AC cord; turn power switch ON.
   2. Connect one lead of High Voltage Insulation Tester to both prongs of the AC plug.
   3. Touch other lead to all exposed metal parts.
   4. Impedance measurement must be 0.3-5.0 Megohms.

B. Leakage test, "live" :
   1. Plug unit directly into the AC outlet: do not use isolation transformer.
   2. Connect one lead of the Leakage Current Tester to earth ground.
   3. Touch other lead to all exposed metal parts.
   4. Leakage measurement must be less than 0.5 milliamps.

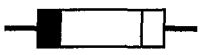
710 TUNER AMPLIFIER

710

TUNER AMPLIFIER

SERVICE SAFETY PRECAUTIONS

1. Replacing the fuses



This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

Reference No	Part Number	Description
F301-F302*AH	5120-0037-0	Fuse 3.15A 250V Time Lag LBC (UL/CSA)
F301-F302*B,C	5120-0024-0	Fuse 3.15A 250V Slow Blow LBC (SEMKO/VDE)
F303-F304*AH	5100-5010-1A	Fuse 500mA 250V Time Lag LBC (UL/CSA)
F303-F304*B,C	5100-5010-1B	Fuse 500mA 250V Slow Blow LBC (SEMKO/VDE)

NOTE :
- <*AH > : USA, CANADIAN MODEL ONLY.
<*B >: UK MODEL ONLY.
<*C > : EUROPEAN MODEL ONLY.

2. Safety-check out

(Only U.S.A. model)
After correcting the original service problem perform the following safety check before releasing the set to the customer.
Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel.
Specifications : 3.3 Mohm±10% at 500V.

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SPECIFICATIONS

POWER AMPLIFIER SECTION

CONTINUOUS AVERAGE POWER OUTPUT INTO 8Ω (Min. power per channel, 20Hz-20kHz, both channels driven, with no more than rated distortion)		**20 W (13 dBW)**
Rated distortion (THD 20Hz-20kHz)		**0.05%**
Clipping power (maximum continuous power per channel)		**25 W**
IHF dynamic headroom at 8 Ω		**+3 dB**
IHF dynamic power (maximum short term power per channel)	8Ω:	**40 W (16 dBW)**
	4 Ω:	**60 W (17.8 dBW)**
	2 Ω:	**80 W (19 dBW)**
Slew rate		**>20 V/usec**
Damping factor (ref. 8 ohms 50Hz)		**>100**
THD + SMPTE + IHF I.M. (from 250mV to rated output)		**<0.05%**
Input impedance		**80 kΩ + 220 pF**
Input sensitivity (for rated output into 8Ω)		**210 ±10 mV**
Signal/Noise ratio, A weighted	ref. 1W	**90 dB**
Frequency response (20Hz-20kHz)	Tone defeat on	**0± 0.3 dB**
	Tone defeat off	**0± 0.8 dB**
Channel separation (2V in, 10W out, 1kHz)		**65 dB**
Controls		
Bass	100Hz	**±7 dB at 10 kHz**
Treble	10kHz	**±6 dB at 100 Hz**

DIMENSIONS AND WEIGHTS

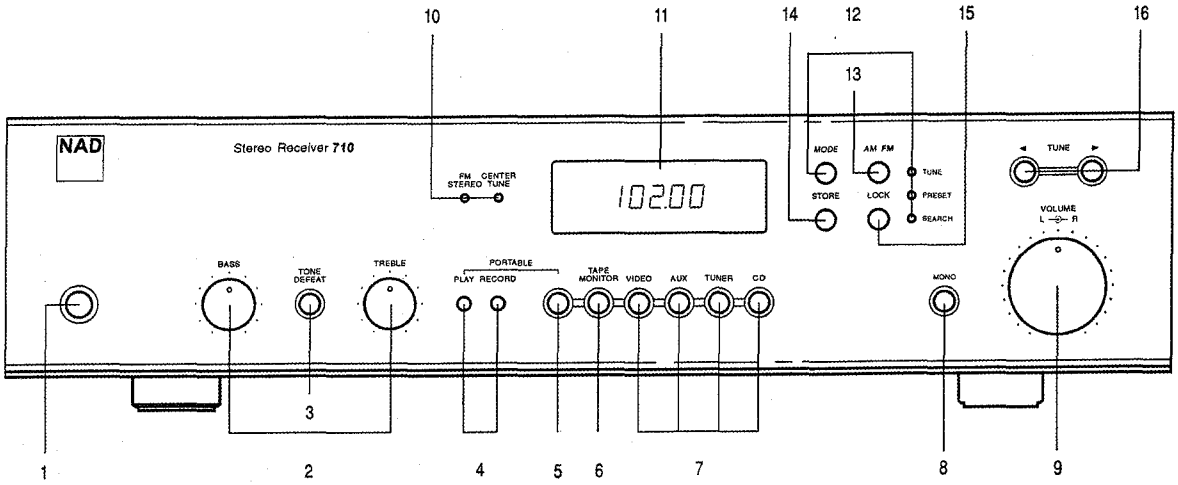
Net Weight	**3.9 kg, 8.58 lb**
Shipping Weight	**4.1kg, 9.02 lb**
Dimensions (WxHxD)	**435 x 110 x 323 mm**

FM TUNER SECTION		***B, *C**	***AH**
Input level is expressed as the reading in open-circuit of 75-ohm soure impedance signal generator			
Usable Sensitivity (98 MHz)		≤ **18 dBμ**	≤ **8 dBμ**
50 dB Quieting	Mono	≤ **20 dBμ**	≤ **14 dBμ**
	Stereo	≤ **38 dBμ**	≤ **36 dBμ**
60 dB Quieting	Mono	≤ **30 dBμ**	≤ **23 dBμ**
	Stereo	≤ **48 dBμ**	≤ **46 dBμ**
Signal / Noise Ratio	Mono	≥ **73 dB**	≥ **70 dB**
(60 dBμ, IHF wtd)	Stereo	≥ **65 dB**	≥ **60 dB**
Frequency Response (30 Hz - 15 kHz, 60 dBμ)		**0 ± 0.7 dB**	**0 ± 0.7 dB**
Channel Separation (60 dBμ)	30 Hz	≥ **30 dB**	≥ **35 dB**
	1 kHz	≥ **32 dB**	≥ **41 dB**
	10 kHz	≥ **27 dB**	≥ **32 dB**
Alternate Channel Selectivity (40 dBμ, ± 400 kHz)		≥ **65 dB**	≥ **60 dB**
Capture Ratio (40 dBμ)		≤ **7 dB**	≤ **2 dB**
AM Suppression (60 dBμ, 100% Mod.FM, 30% Mod AM)		≥ **51 dB**	≥ **54 dB**
Image Rejection (119.4 MHz)		≥ **85 dB**	≥ **74 dB**
I.F. Rejection (10.7 MHz)		≥ **85 dB**	≥ **75 dB**
Pilot Suppression (60 dBμ)		≥ **60 dB**	≥ **60 dB**
THD (60 dBμ, 100%Mod. for AH, 40% Mod. for C,1 kHz)			
	Mono	≤ **0.2%**	≤ **0.2%**
	L - R	≤ **0.2%**	≤ **0.2%**
	L + R	≤ **0.2%**	≤ **0.2%**
Auto-Search Sensitivity		**16-30 dBμ**	**16-30 dBμ**
Center Tune Sensitivity		**14-22 dBμ**	**14-22 dBμ**
Stereo Indicator Sensitivity	On	**18-26 dBμ**	**18-26 dBμ**
	Off	**17-25 dBμ**	**17-25 dBμ**

AM TUNER SECTION		
Usable Senstivity (1000 kHz or 999 kHz)	≤ **50 dBμ**	≤ **50 dBμ**
Signal / Noise Ratio (96 dBμ, 30% Mod, 1000 kHz or 999 kHz)	≥ **48 dB**	≥ **48 dB**
THD (96 dBμ, 1000 kHz or 999 kHz)	≤ **2%**	≤ **2%**
Adjacent Channel Selectivity (± 10 kHz or ± 9 kHz)	≥ **25 dB**	≥ **25 dB**
Image Rejection (1900 kHz or 1899 kHz)	≥ **30 dB**	≥ **30 dB**
I.F. Rejection (450 kHz)	≥ **53 dB**	≥ **53 dB**
Auto-Search sensitivity	**68 ± 10 dBμ**	**68 ± 10 dBμ**

REAR PANEL / FRONT PANEL VIEW

FRONT PANEL

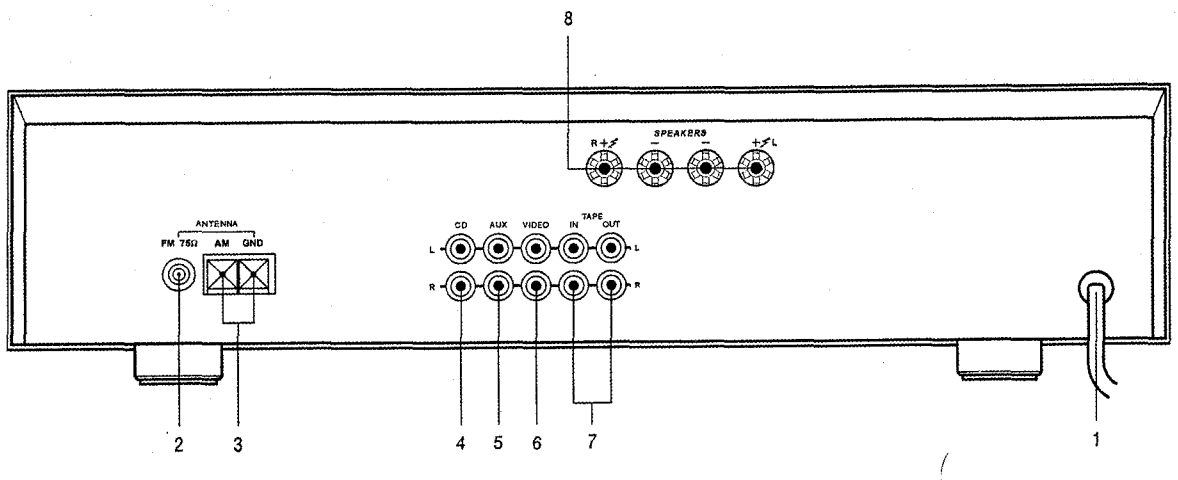


1. POWER SWITCH
2. BASS & TREBLE CONTROL
3. TONE DEFEAT SWITCH
4. PORTABLE INPUT/OUTPUT CONNECTORS
5. PORTABLE SWITCH
6. TAPE MONITOR SWITCH
7. INPUT SELECTORS
8. MONO SWITCH
9. DUAL VOLUME CONTROL
10. STEREO AND CENTER TUNE INDICATORS
11. DISPLAY PANEL
12. MODE SWITCH AND INDICATORS
13. AM/FM SELECTOR
14. STORE SWITCH
15. LOCK SWITCH
16. TUNE UP/DOWN

The graphic symbol of a lightning flash with an arrow point within a triangle signifies that there is dangerous voltage within the unit and it poses a hazard to anyone removing the cover to gain access to the interior of the unit. **Only qualified service personnel should make any such attempt.**

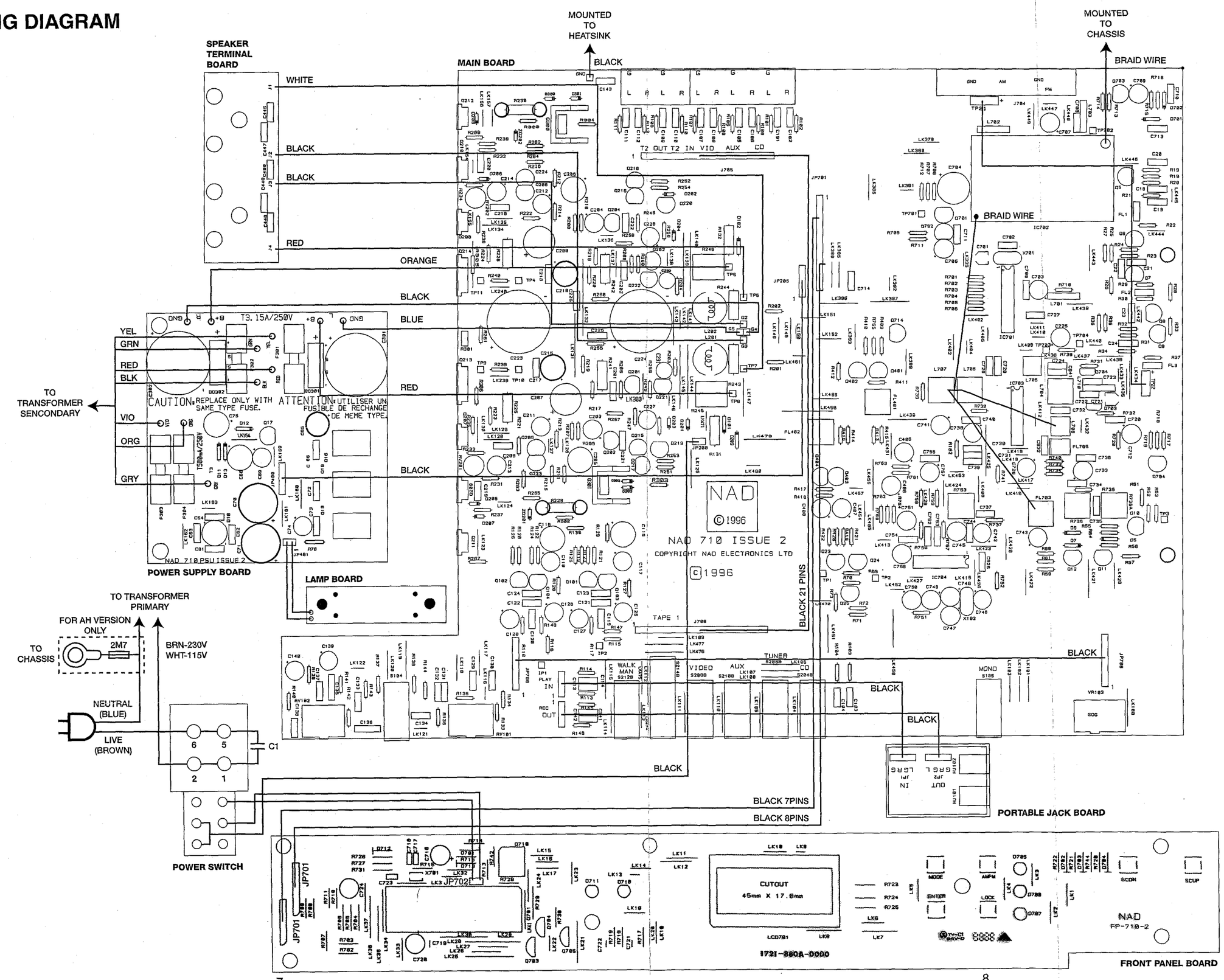
The graphic symbol of an exclamation point within an equilateral triangle warns a user of the device that it is necessary to refer to the instruction manual and its warnings for proper operation of the unit.

REAR PANEL CONNECTIONS



1. AC POWER CORD
2. FM ANTENNA
3. AM ANTENNA/GROUND
4. CD INPUT
5. AUX INPUT
6. VIDEO INPUT
7. TAPE IN/OUT
8. SPEAKER TERMINALS

WIRING DIAGRAM



DISASSEMBLY INSTRUCTIONS

1. Remove machine screws M4.0 x 6.0 (① to ④) from the side panels. Remove tapping screw 3.0 x 8.0 ⑤ from the back panel. Refer to **Figure No. 1.**

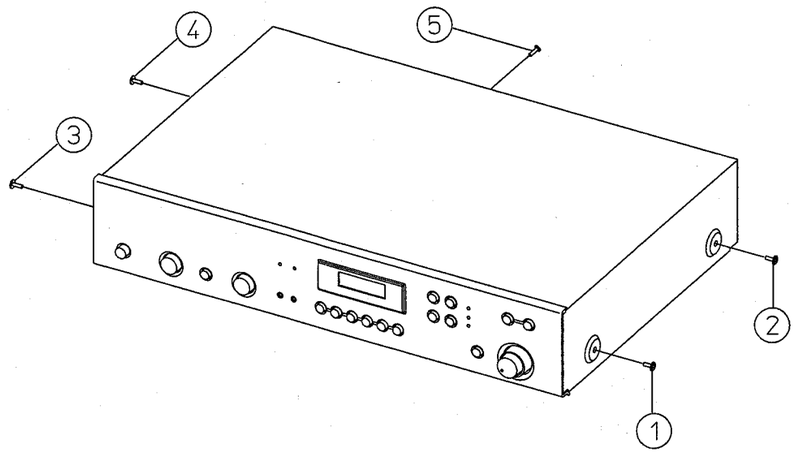


Figure No. 1.

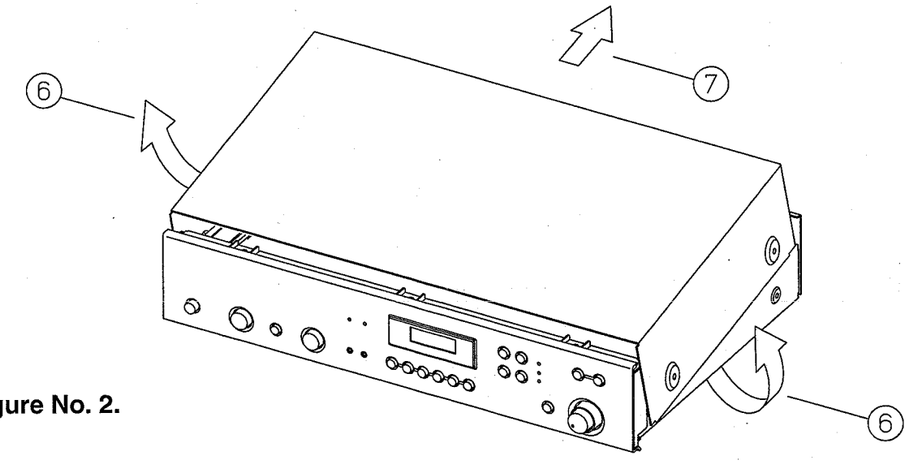
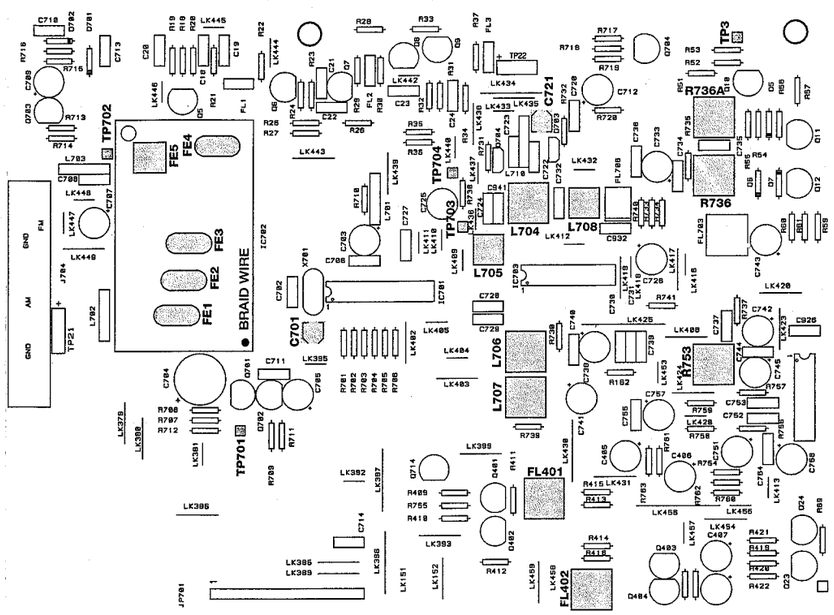


Figure No. 2.

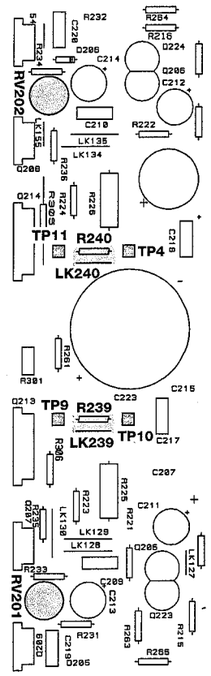
2. Pull both sides of the TOP COVER slightly outwards, tilt approximately 35° and then move in the direction shown in **Figure No. 2.**

ADJUSTMENT POINTS DIAGRAM

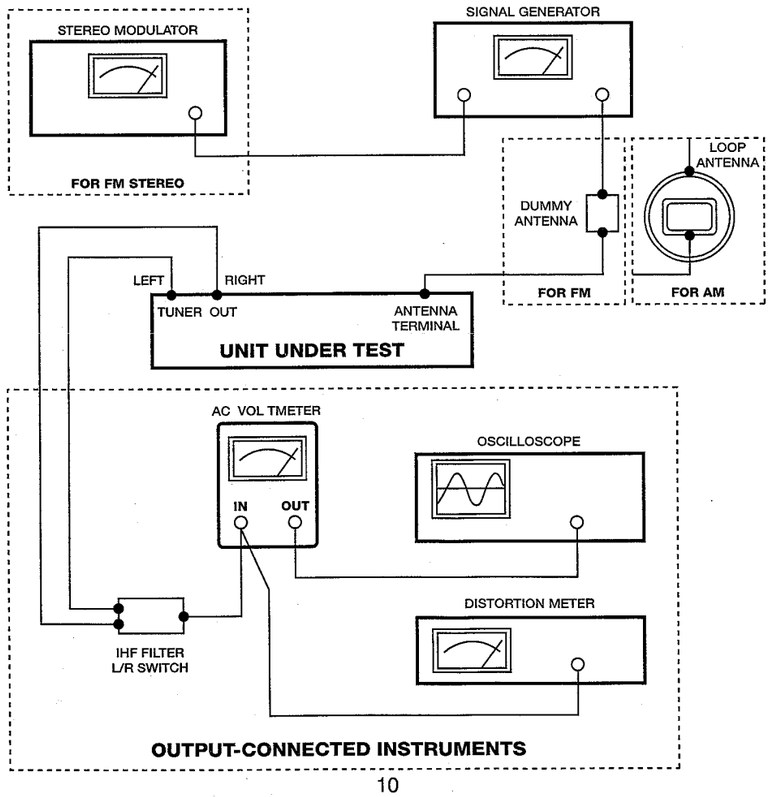
1. TUNER



2. IDLE CURRENT



INSTRUMENT SET UP



ALIGNMENT PROCEDURES

FM SECTION

AF MODULATION:	1 kHz, 75 kHz DEVIATION, MONO MODE
STORE FREQUENCY:	98 MHz, 87.5 MHz, 108 MHz, 90 MHz, 106 MHz
RF LEVEL:	75-ohm IMPEDANCE, OPEN CIRCUIT

OSCILLATION TUNING VOLTAGE

Connect DVM between TP701 & GND.
For A16 Front-end Module:
Tune to 87.5 MHz, adjust FE4 (osc coil) to read 3 ± 0.5 V.
Tune to 108 MHz, adjust FE4 (osc coil) to read 20.5 ± 0.5 V.
For G55 or G58 Front-end Module:
Tune to 87.5 MHz, adjust FE4 (osc coil) to read 1.6 ± 0.5 V.
Tune to 108 MHz, adjust FE4 (osc coil) to read 8.0 ± 0.5 V.

I.F.

Connect DVM between TP703 & TP704
Apply 10.7 MHz, 90 dBμ via 1K-ohm to TP702.
Adjust L706 to read 0 ± 50 mV.
Adjust L707 for minimum distortion (THD).
Repeat adjustment until no further improvement.

SYNTHESIZER I.F. TRACKING

Disconnect 10.7MHz tap to TP702.
Maintain connection of DVM across TP703 & TP704.
Apply 98 MHz, 60 dBμ to antenna input.
Tune to 98 MHz.
Adjust C701 to read 0 ± 20 mV.
Fine adjust L707 for minimum distortion.
Repeat until no further improvement.

FRONT-END IF

Connect DVM between TP3 and ground.
Turn R736A fully clockwise and R736 fully anti-clockwise.
Apply 98 MHz, 18 dBμ to antenna input.
Adjust FE5 to obtain minimum reading on DVM.

R.F.

Apply 98 MHz, 8 dBμ for AH or 8 dBμ for C, to antenna input.
Check THD.
If THD > 3%, adjust FE1, FE2 & FE3 in the front-end module with non-metallic tool for minimum THD.
Check THD at 90 MHz & 106 MHz with 9 dBμ input for AH, or 23 dBμ for C.

AUTO-SEARCH LEVEL

Turn R736 fully clockwise and R736A fully anti-clockwise.
Set stereo modulator to L = R mode.
Apply 98 MHz, 18 dBμ to antenna input.
Adjust R736 until Center Tune LED just lights.
Increase input level to 22 dBμ.
Adjust R736A until FM stereo LED just lights.
Check if auto-search works at 28 dBμ.

STEREO SEPARATION & PILOT SUPPRESSION
FM Stereo: 1kHz, 67.5kHz devi., 60dBμV, Pilot signal 19kHz, 7.5kHz devi.

Set modulated signal to Left only.
Adjust R753 for minimum output at Right channel.
Set modulated signal to Right only.
Adjust R753 for minimum output at Left channel.
Repeat until readings are the same.
Turn off modulating signal, leaving the pilot tone.
Adjust FL402 and FL401 for minimum outputs on Right and Left channels respectively.

AM SECTION

Press Tune UP while pressing Mode switch to toggle the AM step between 9 kHz and 10 kHz.
AF MODULATION: 400 Hz, 30%
FOR AH VERSION, STORE FREQUENCIES 600, 1000, 1400 kHz.
FOR C & B VERSIONS, STORE FREQUENCIES 603, 999, 1404 kHz.
Connect a test loop antenna to the signal generator and the provided loop antenna to the unit under test.
Position the provided loop antenna at the center of the test loop antenna.

OSCILLATION TUNING VOLTAGE

Connect DVM between TP701 & ground.
Tune to 603/600 kHz.
Adjust L705 for 1.75 ± 0.05 V.

I.F.

Apply 999/1000 kHz, 65dBμ to antenna input.
Tune to 999/1000 kHz.
Adjust L708 for maximum output.

R.F.

Apply 603/600 kHz, 65dBμ.
Tune to 603/ 600 kHz.
Adjust L704 for maximum output.
Apply 1404/1400 kHz, 65dBu.
Tune to 1404/ 1400 kHz.
Adjust C721 for maximum output.
Repeat until no further improvement.

AMPLIFIER ADJUSTMENT

IMPORTANT

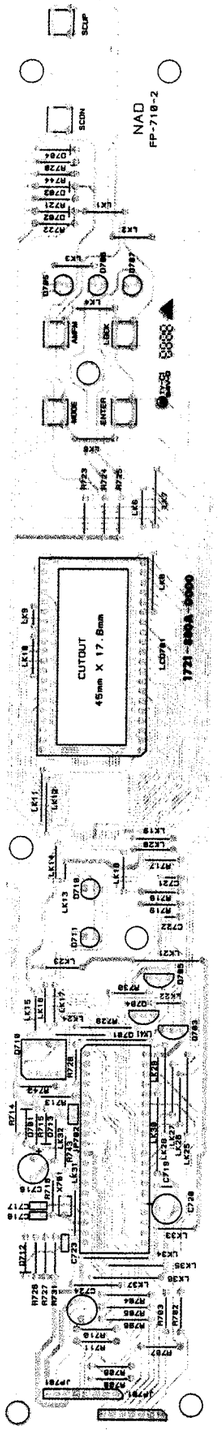
Speaker impedance switch should be in the 8 ohms position while adjusting the amplifier.
Reset switch after adjustment procedure is completed.

Idle Current

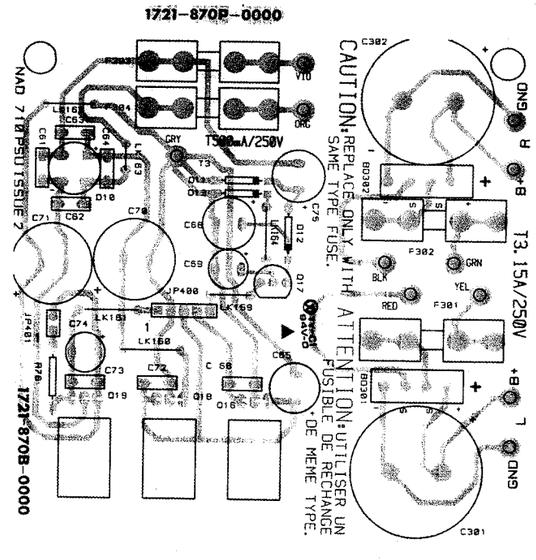
Remove solder link in between TP9 and TP10, or cut LK239.
Connect DC millivoltmeter at TP9 and TP10 (i.e. across R239, 1-ohm resistor).
Adjust RV201 for 25-35mV reading on voltmeter.
Remove solder link in between TP4 and TP11, or cut LK240.
Connect DC millivoltmeter at TP4 and TP11 (i.e. across R240, 1-ohm resistor).
Adjust RV202 for 25-35 mV reading on voltmeter.
Leave power on for at least 5 minutes, and check for idle current.
Replace solder link between TP9 and TP10 for left channel, and TP4 and TP11 for right channel, or reconnect LK239 and LK240.

PCB LAYOUT

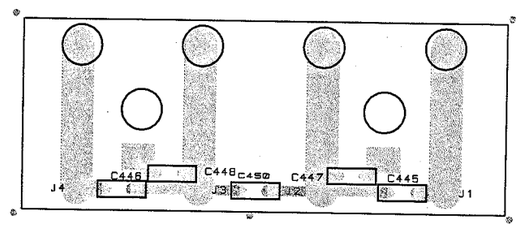
FRONT PANEL PCB



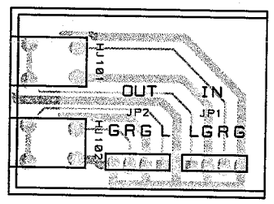
POWER SUPPLY PCB



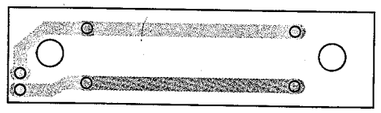
SPEAKER TERMINAL PCB



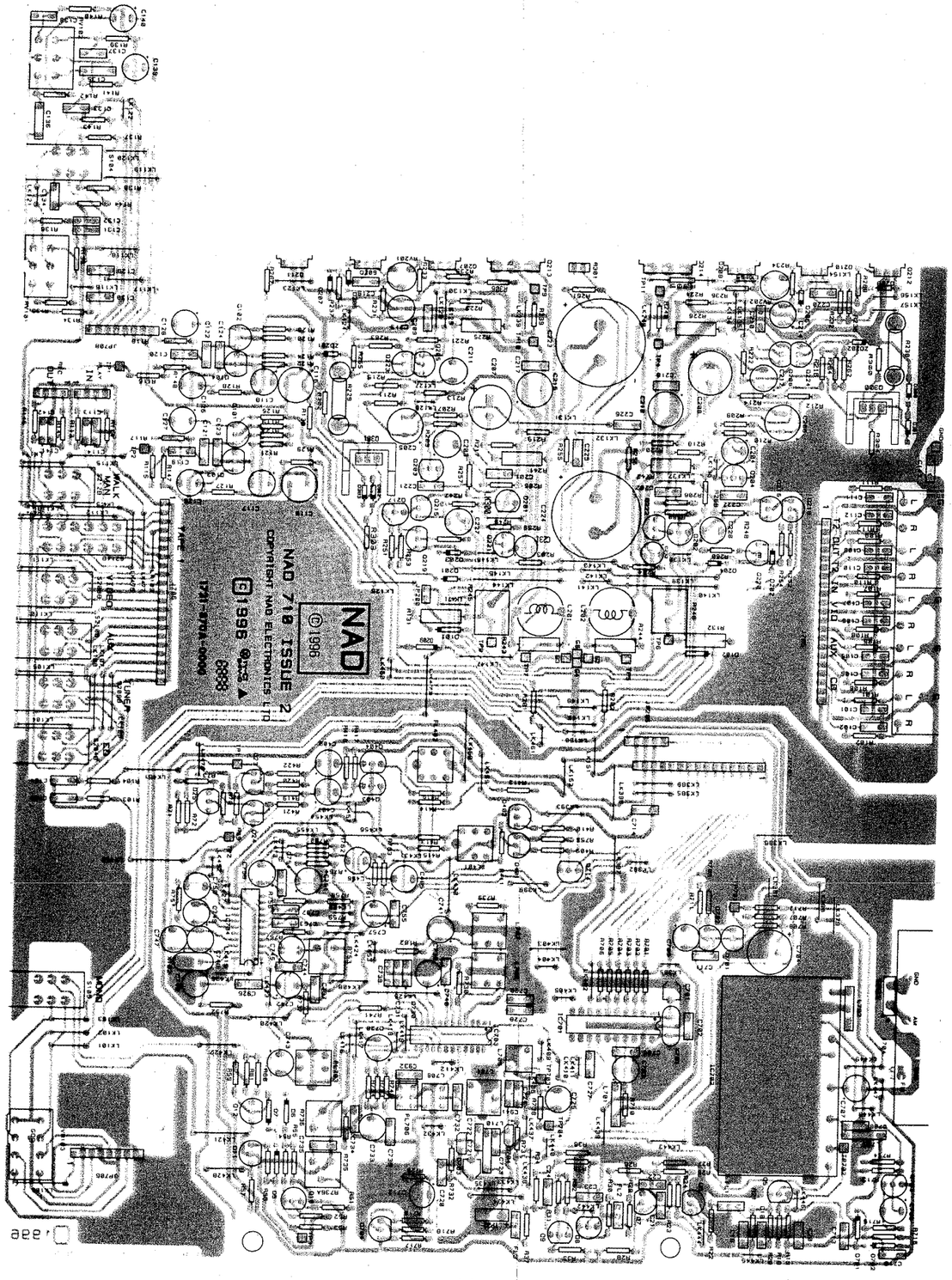
PORTABLE JACK PCB



LAMP PCB

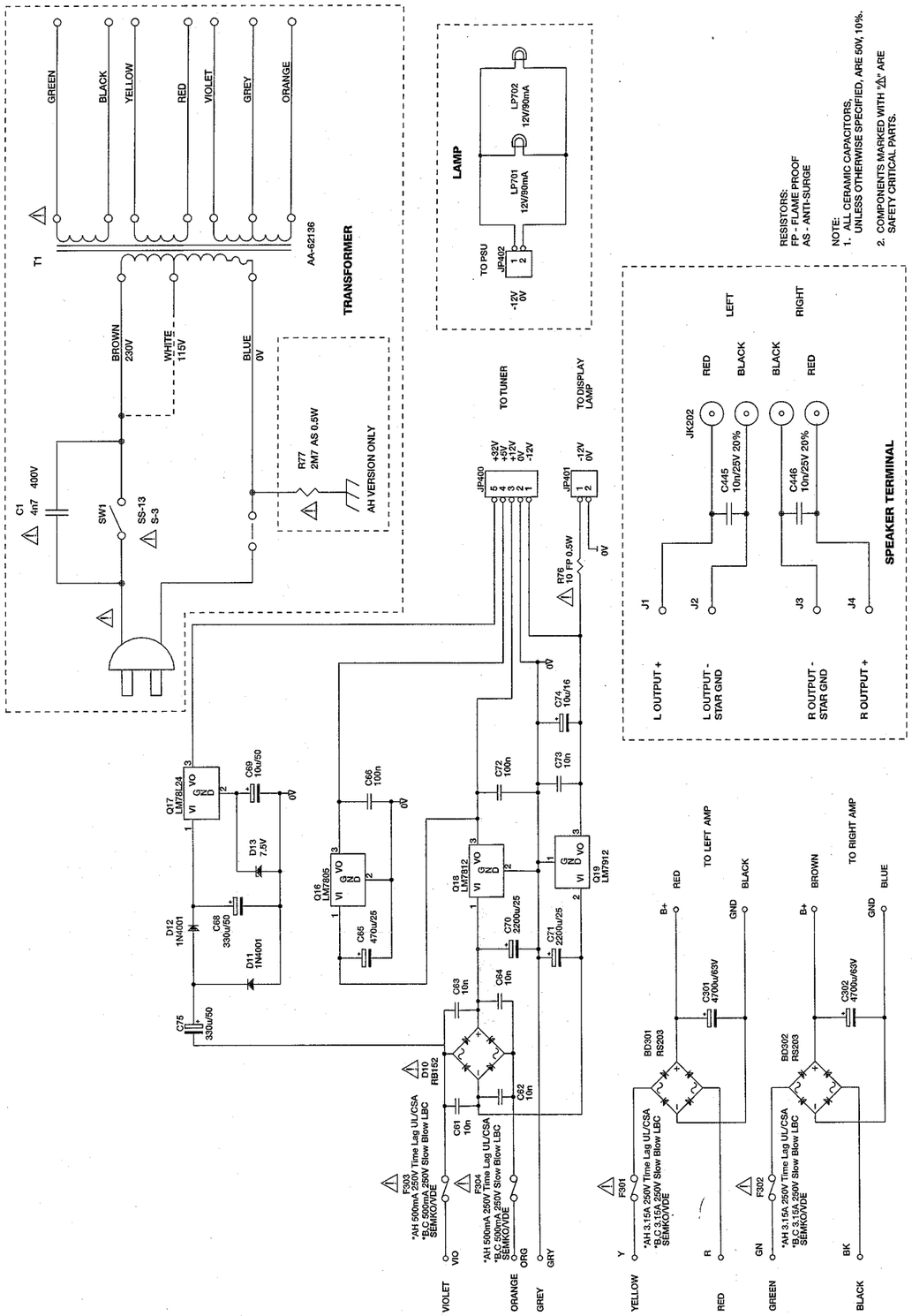


MAIN PCB

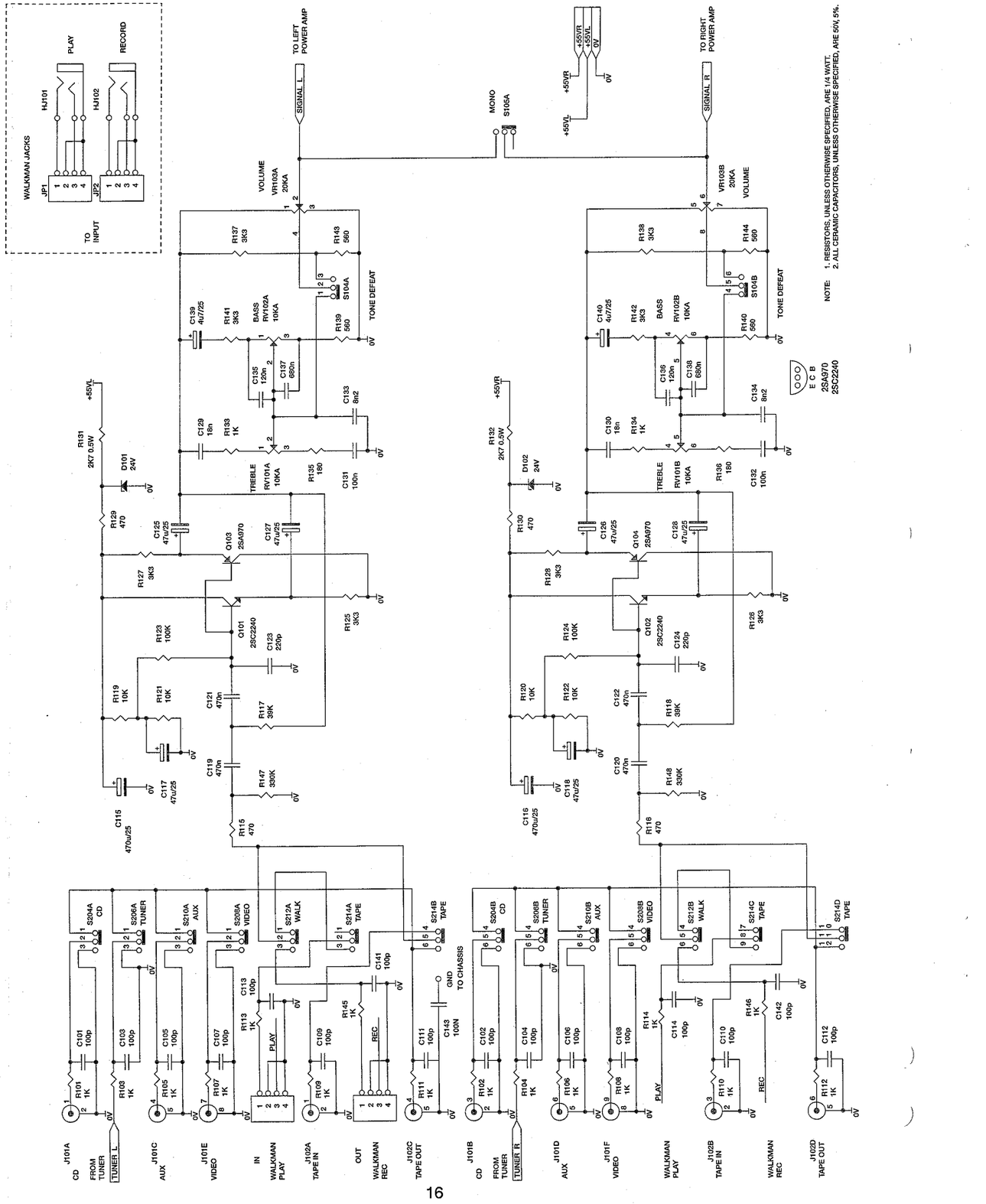


SCHEMATIC DIAGRAM

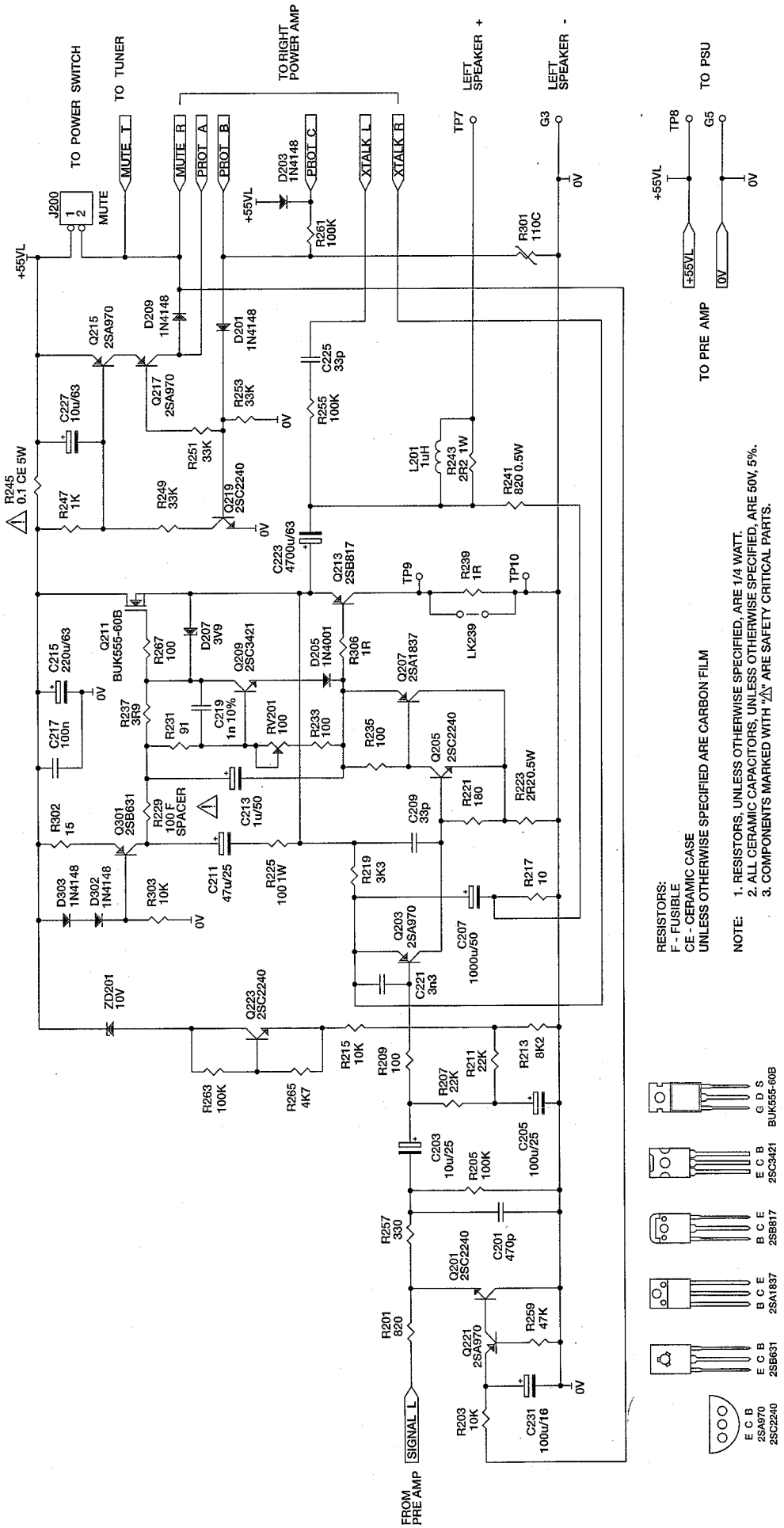
PSU, SPEAKER, LAMP & TRANSFORMER



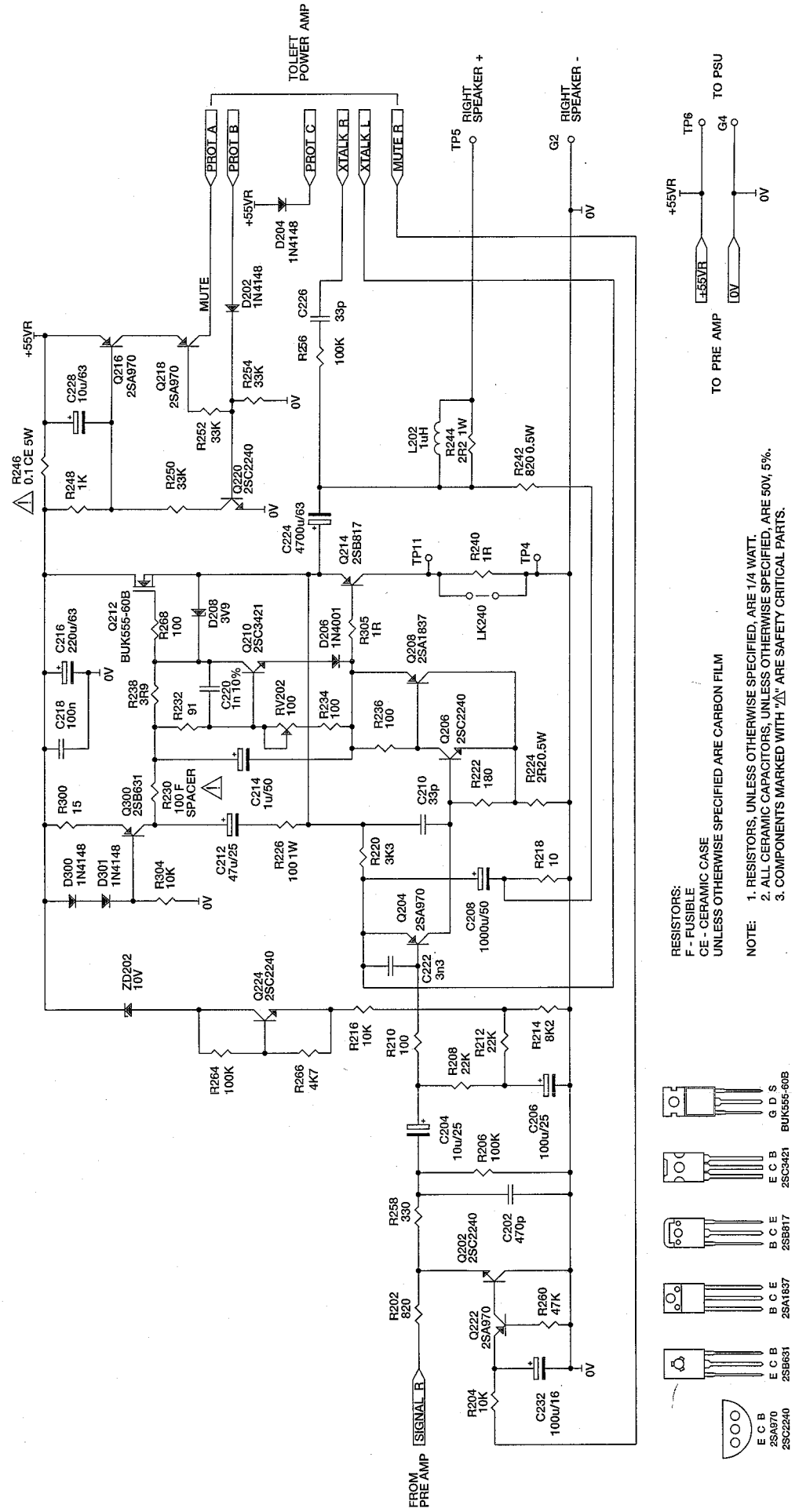
INPUT



POWER AMPLIFIER LEFT CHANNEL



POWER AMPLIFIER RIGHT CHANNEL



TUNER

Voltage Measured on IC701 LM7000

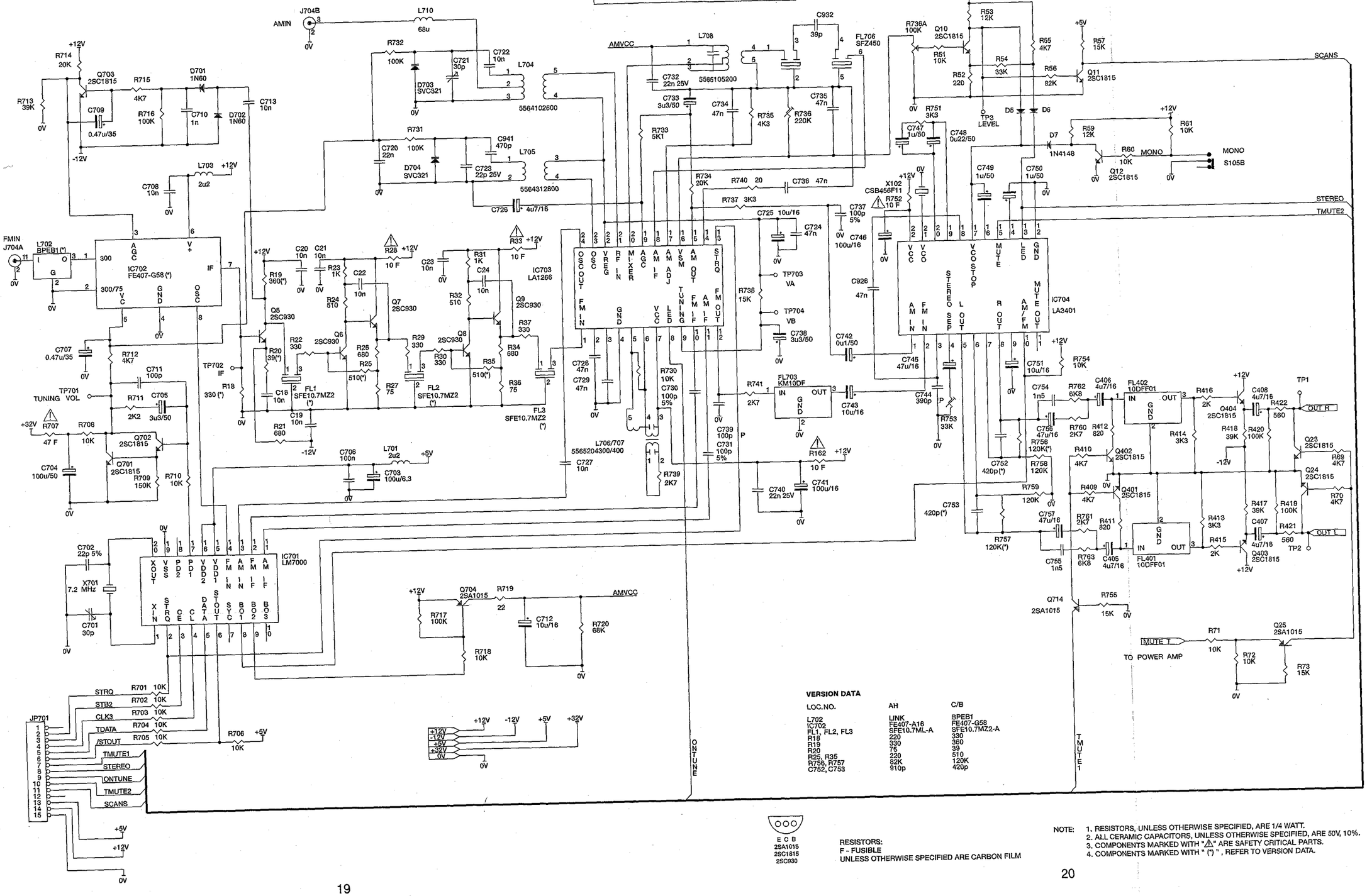
Pin No.	FM	AM	Pin No.	FM	AM
1	1.62	1.62	11-12	0.07	0.07
2-4	0	0	13	0.07	1.80
5	4.95	0	14	2.78	0.04
6	4.95	4.95	15-16	4.95	4.95
7	0	0	17	1.19	1.19
8	0.25	10.66	18	1.57	1.83
9	11.74	0.23	19	0	0
10	0.91	0.99	20	1.30	1.30

Voltage Measured on IC703 LA1266

Pin No.	FM	AM	Pin No.	FM	AM
1	2.54	1.05	13	0	0
2-3	0	1.05	14	1.54	1.52
4	0	0	15	1.54	1.46
5	11.61	11.64	16-17	0	0
6-7	11.58	11.58	18	2.54	1.08
8	10.30	10.30	19	1.53	1.44
9	4.07	3.81	20	0	11.84
10	2.46	2.65	21-23	4.0	3.68
11	2.88	2.30	24	3.22	2.30
12	3.14	3.17			

Voltage Measured on IC704 LA3401

Pin No.	FM	AM	Pin No.	FM	AM
1-4	3.20	3.20	14	5.0	0.05
5	6.27	6.27	15	0	0
6	3.26	3.26	16	2.81	2.81
7	3.20	3.20	17	8.15	9.50
8	6.32	6.32	18	4.76	5.20
9	3.20	3.20	19	2.81	5.20
10	2.50	10.66	20	6.44	7.48
11-12	0	0	21	2.0	2.0
13	10.41	10.41	22	11.66	11.66



VERSION DATA

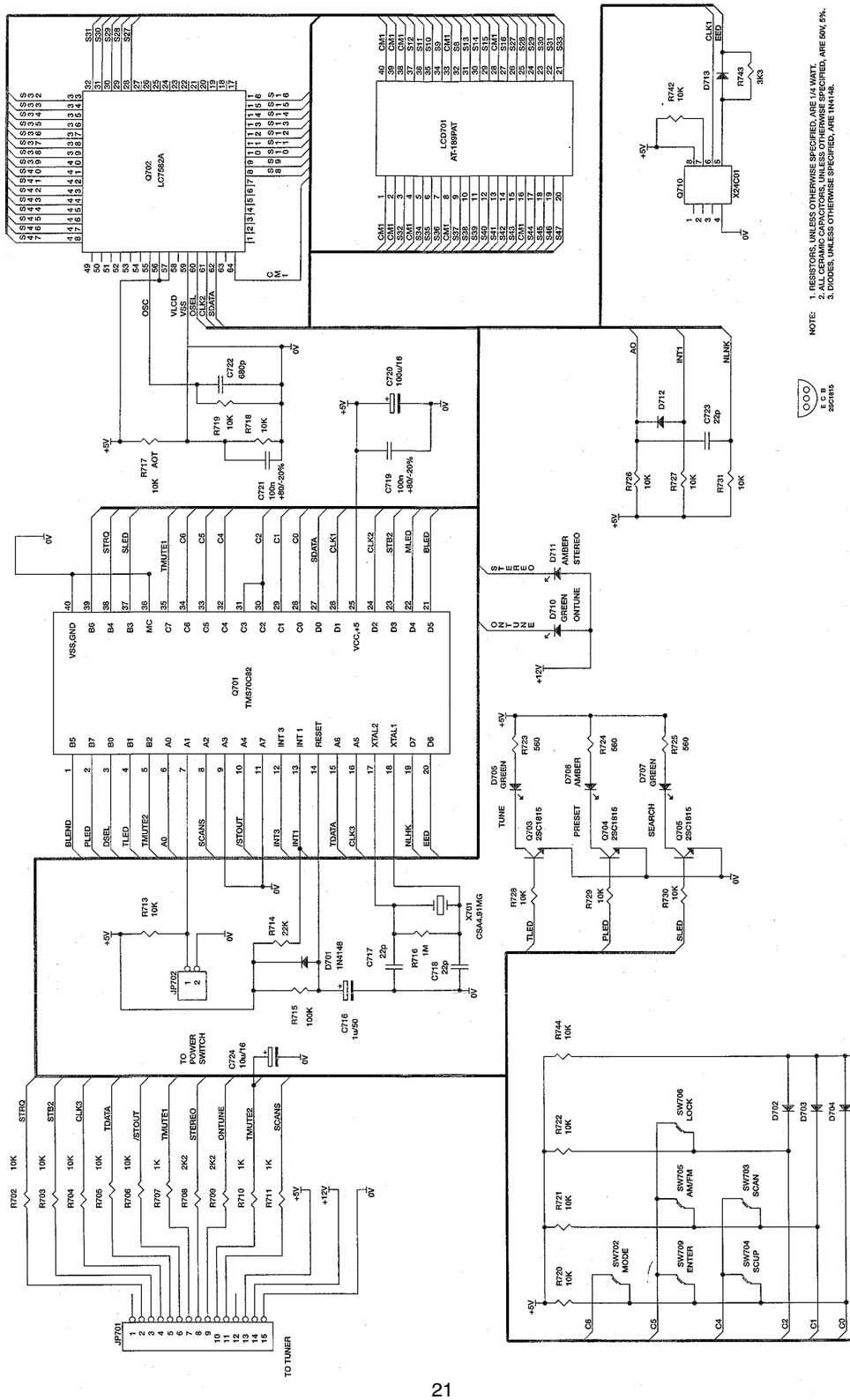
LOC.NO.	AH	C/B
L702	LINK	BPEB1
IC702	FE407-A16	FE407-G58
FL1, FL2, FL3	SFE10.7ML-A	SFE10.7MZ2-A
R18	220	330
R19	330	360
R20	75	39
R25, R35	220	510
R756, R757	82K	120K
C752, C753	910p	420p

E C B
2SA1015
2SC1815
2SC930

RESISTORS:
F - FUSIBLE
UNLESS OTHERWISE SPECIFIED ARE CARBON FILM

NOTE:
1. RESISTORS, UNLESS OTHERWISE SPECIFIED, ARE 1/4 WATT.
2. ALL CERAMIC CAPACITORS, UNLESS OTHERWISE SPECIFIED, ARE 50V, 10%.
3. COMPONENTS MARKED WITH "⚠" ARE SAFETY CRITICAL PARTS.
4. COMPONENTS MARKED WITH " (*) " , REFER TO VERSION DATA.

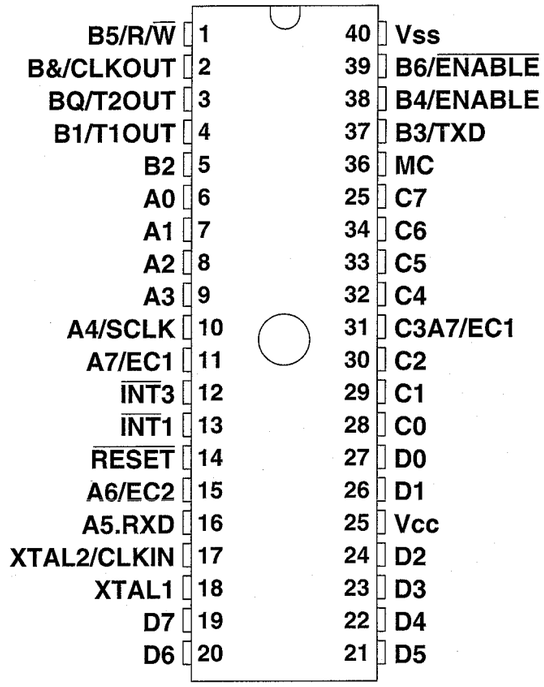
FRONT PANEL



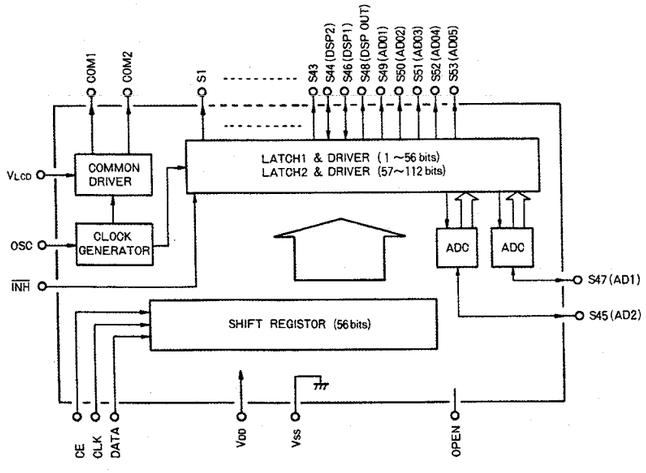
IC BLOCK DIAGRAM

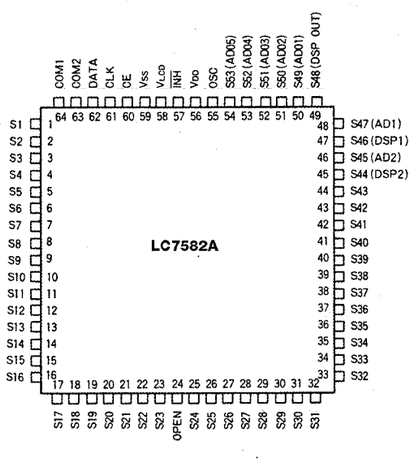
FRONT PANEL BOARD

Q701: TMS70CT82

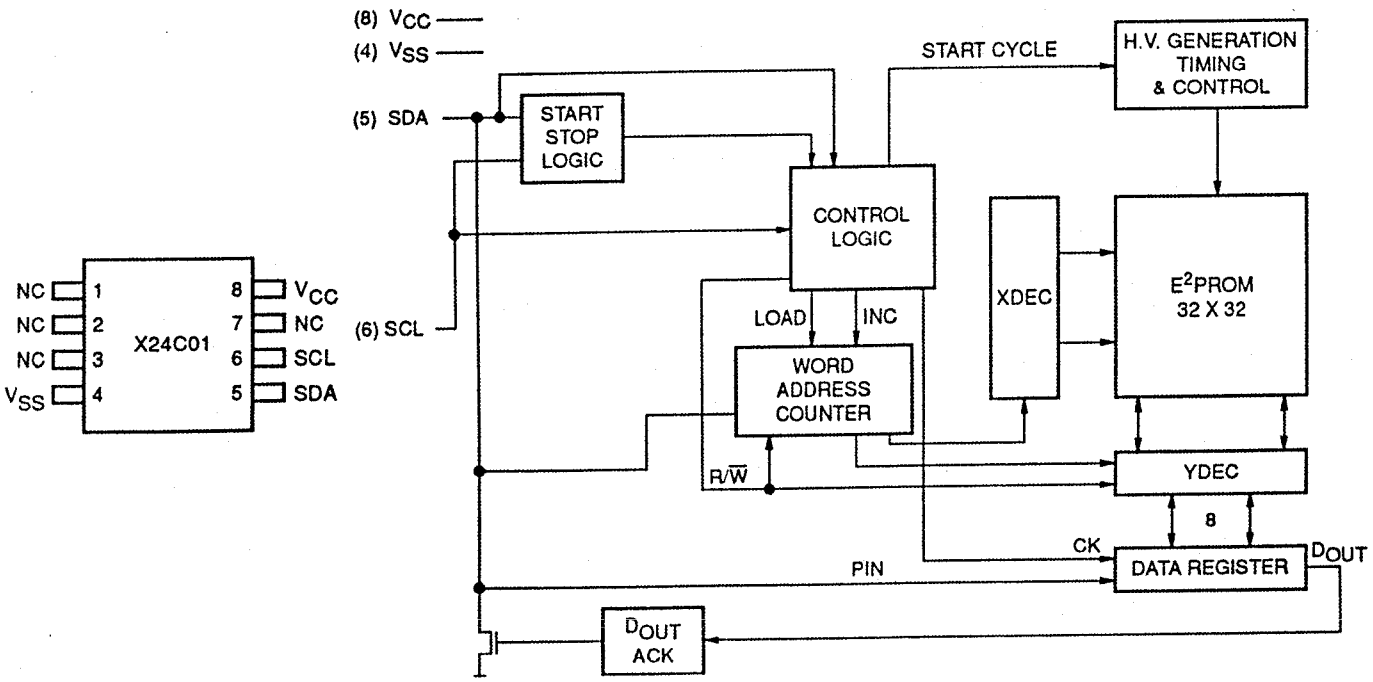


Q702: LC7582A (BLOCK DIAGRAM)



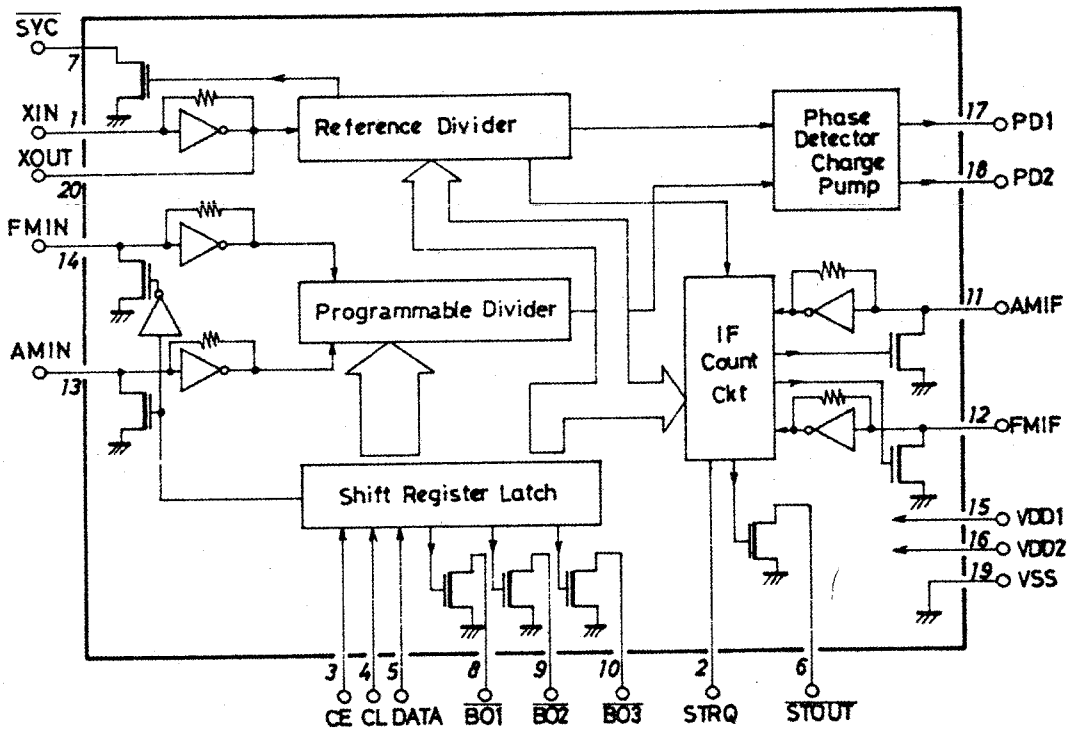


Q710: X24C01P

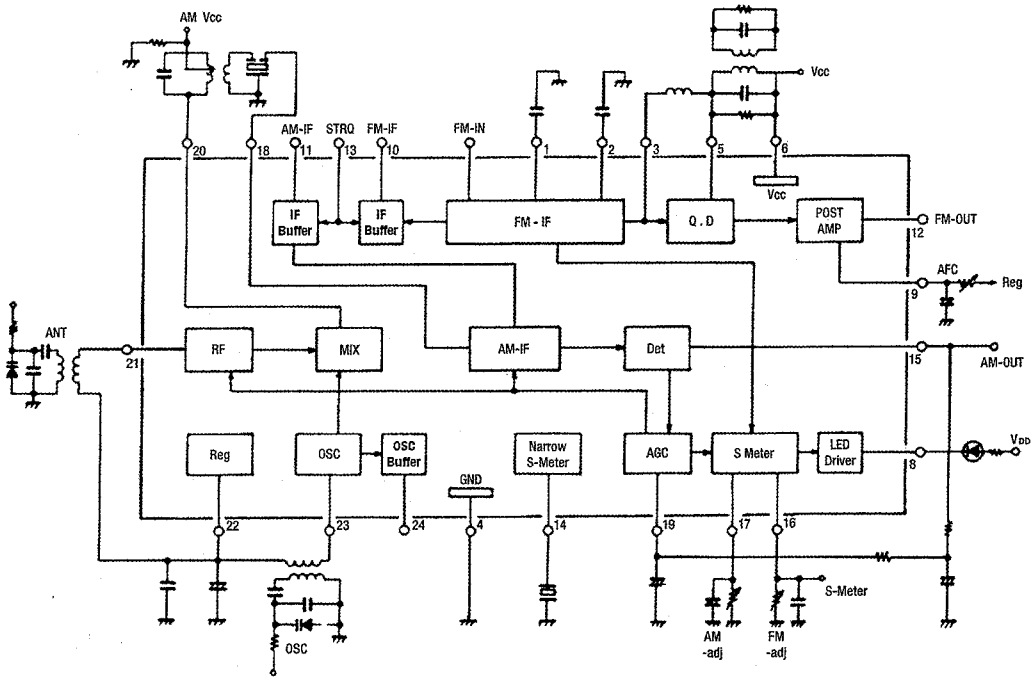


MAIN AUDIO BOARD

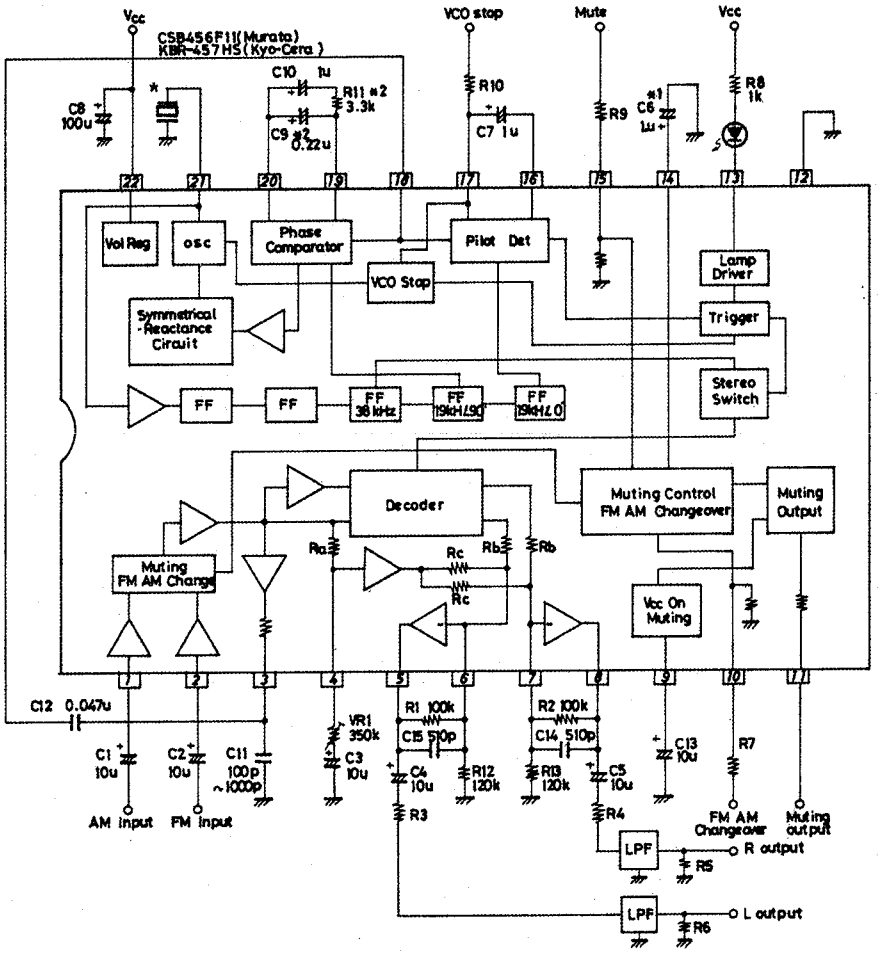
IC701: LM7000 (BLOCK DIAGRAM)



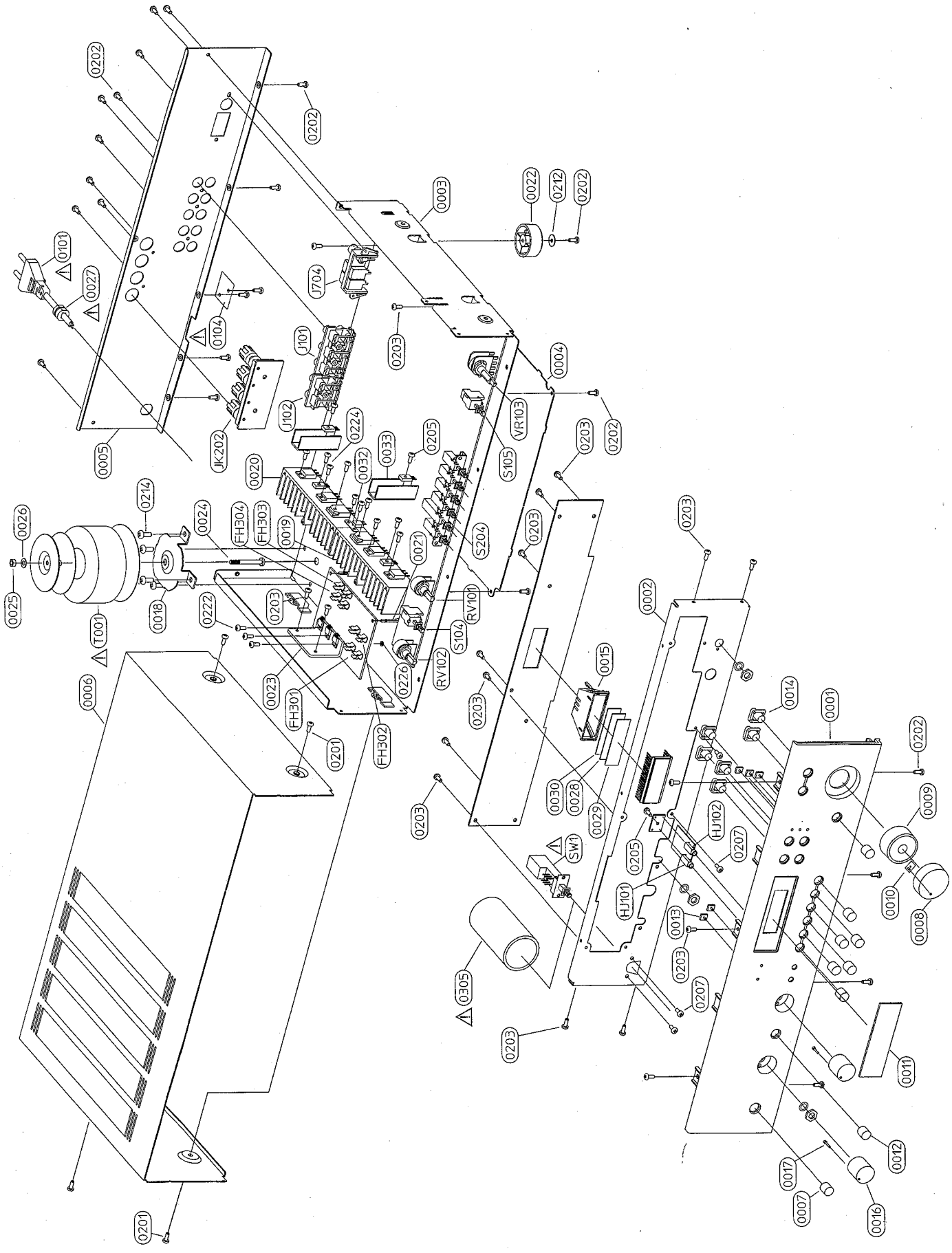
IC703: LA1266 (BLOCK DIAGRAM)



IC704: LA3401 (BLOCK DIAGRAM)



EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Item	Part No	Description	Qty
0001	1463-7111-0	FASCIA	1
0002	1402-5040-0	SUBFASCIA	1
0003	1402-5050-0	CHASSIS	1
0004	1402-5070-0	BASE COVER	1
0005*AH	1402-5061-0	REAR PANEL	1
0005*B,C	1402-5062-0	REAR PANEL	1
0006	1402-3840-0	TOP COVER	1
0007	2437-510B-0	DIA 9.5 GLOSS POWER BUTTON	1
0008	2439-9801-0	VOLUME KNOB TOP	1
0009	2439-9901-0	VOLUME KNOB BODY	1
0010	4152-1921-1	VOLUME KNOB POINTER	1
0011	3714-9012-0	WINDOW LENS W/SS	1
0012	2437-6001-0	LONG BUTTON 8.0MM (INPUT SELECT)	8
0013	3714-5706-0	LED LENS	5
0014	2437-7301-0	SINGLE BUTTON	6
0015	2150-2171-1	LIGHTBOX	1
0016	2437-5701-1	KNOB 18.5MM (BASS,TREBLE,BALANCE)	2
0017	4152-0041-0	POINTER	2
0018	4104-3721-0	TRANSFORMER BRACKET	1
0019	5400-1291-1	FRONT HEATSINK	1
0020	5400-1301-1	REAR HEATSINK	1
0021	4152-0791-0	PCB SUPPORT CBS-18R 18MM HIGH	2
0022	4151-9371-1	RUBBER FOOT 14.8MM HIGH	4
0023	5400-0761-0	L SHAPE HEATSINK PLATE	1
0024	2900-6040-0000	SCREW M6X1P 40MM P/H (YEL.ZN)	1
0025	2832-6101-0	NUT 6X1.0X4.8X10	1
0026	2843-6612-0	SPRING WASHER 1.2X6.6X12	1
0027 ⚠	4151-9461-0	STRAIN RELIEF BUSHING 4N-4	1
0028	3714-640B-0	LEE FILTER NO.202 1/2 CT BLUE	3
0029	3714-110B-0	LEE FILTER NO217 BLUE DIFFUSER	1
0030	3714-1006-0	DIFFUSER LENS 1MM PC SHEET	1
0032	4132-5357-0	THERMISTOR FLAT BRACKET	1
0033	5400-1161-0	U SHAPE HEATSINK PLATE	2
0101*AH ⚠	7009-3100-1	AC CORD	1
0101*B ⚠	7009-5110-1	AC CORD	1
0101*C ⚠	7009-3110-1	AC CORD	1
SW1 ⚠	5200-3504-0	POWER SWITCH 5A/40A 250V DPDT	1
0104*AH ⚠	4152-0991-0	INSULATING SHEET	1
0201	2900-4006-3010	M4X0.5PX6MM W/FLAT WASHER	4
0202	2954-3008-3000	TAPPING 3X8MM B-TITE (BLK.ZN)	34
0203	2954-3006-0000	TAPPING 3X6MM B-TITE (YEL.ZN)	19
0205	2954-3008-0000	TAPPING 3X8MM B-TITE (YEL.ZN)	3
0207	2904-3006-0000	MACHINE SCREW 3X6MM (YEL.ZN)	4
0212	2842-3367-0	METAL WASHER ID=3.3 OD=6.7	4

Item	Part No	Description	Qty
0214	2904-4006-3000	MACHINE SCREW 4X6MM (BLK.ZN)	4
0222	2904-3010-0000	MACHINE SCREW 3X10MM (YEL.ZN)	3
0224	2904-3008-0000	M3X8MM BINDING HEAD	10
0226	2836-3005-0	M3X0.5P HEX CAP NUT	3
0305 ⚠	1660-0640-0	SHRINKABLE TUBE ID=30 UL/CSA	1
JK202*AH	2103-6004-0	SPK TERM W/O PLUG	1
JK202*B,C	2103-6604-0	SPK TERM W PLUG	1
J704*AH	2107-0641-0	ANT-TERMINAL F-TYPE	1
J704*B,C	2107-0681-0	ANT-TERMINAL DIN-TYPE	1
HJ101-HJ102	2113-1091-0	PORTABLE JACK 3.5MM	2
FH301-FH304	4131-9131-0	FUSE HOLDER 6.5MM PITCH RECT	8
J101	2113-0206-0	6P RCA R/W NI	1
J102	2113-0104-1	4P RCA JACK R/W NI	1
RV101	4750-4150-0	VR-TRE 2X10KA WASHER & NUT	1
RV102	4750-4150-0	VR-BASS 2X10KA WASHER & NUT	1
VR103	4750-4096-1	VR-VOLUME 2X20KA SR16B20-013	1
S104-S105	5200-3121-0-01	2P2T ALPS SPUN W/O FRAME	2
S204	5200-3505-0	6-KEY INPUT SELECTOR SWITCH	1
T001 ⚠	1806-2141-0	POWER TRANSFORMER	1

NOTE : – **The components identified by ⚠ mark are critical for risk of fire and electrical shock. Replace only with part number specified.**

– **<*AH > : USA, Canadian model only.**

<*B > : UK model only.

<*C > : European model only.

ELECTRICAL PARTS LIST

Reference No	Part Number	Description
LAMP ASSMENBLY		
PC BOARD		
	MI-21870C-01-S	LAMP ASSEMBLY
LAMP		
LP701-LP702	2450-0716-0	LAMP 12V 90MA 5X10MM
SPEAKER TERMINAL ASSEMBLY		
PC BOARD		
*AH	MI-21870D-01-S	SPK TERMINAL ASSEMBLY
*B,C	MI-21870D-02-S	SPK TERMINAL ASSEMBLY
PHONE JACK ASSEMBLY		
PC BOARD		
	MI-21870E-01-S	PHONE JACK ASSEMBLY
FRONT PANEL ASSEMBLY		
PC BOARD		
	MI-21880A-01-S	FRONT PANEL ASSEMBLY
CAPACITORS		
C716	157F-105Z-5-IU	CE 50V 1µF +80/-20%
C717-C718	15CH-220J-5-GG	CC 50V 22pF 5% NPO
C720	157D-107Z-5-KW	CE 16V 100µF +80/-20%
C723	15CH-220J-5-GG	CC 50V 22pF 5% NPO
C724	157D-106M-5-IU	CE 16V 10µF 20%
DIODES		
D701-D704	4804-1480-2	DIODE 1N4148
D705	3700-3512-G	LED GREEN (L-424GDT)3MM
D706	3700-3513-Y	LED AMBER (L-424YDT)3MM
D707,710	3700-3512-G	LED GREEN (L-424GDT)3MM
D711	3700-3513-Y	LED AMBER (L-424YDT)3MM
D712-D713	4804-1480-2	DIODE 1N4148
LCD DSPLAY		
LCD701	2460-1010-0	LCD DISPLAY
ICS		
Q701	3130-3530-0	IC TMS70C82 MICROCONTROLLER
Q702	3130-3420-0	IC LC7582A SANYO LCD DRIVER
Q710	3130-3450-0	IC X24C01P XICOR EEPROM
TRANSISTORS		
Q703-Q705	4851-815Y-5	TR 2SC1815-Y HFE 120-240
SWITCHES		
SW702-SW706, SW709	5200-3241-0-01	TACT NO LED SKHQAC ALPS
RESONATOR		
X701	2703-0120-0	CERAMIC RESONATOR CSA 4.91MG

Reference No	Part Number	Description
MAIN AUDIO ASSEMBLY		
PC BOARD		
*AH	MI-21870A-01-S	MAIN AUDIO ASSEMBLY
*B,C	MI-21870A-02-S	MAIN AUDIO ASSEMBLY
CAPACITORS		
C115-C116	157E-477Z-5-S5	CE 25V 470µF +80/-20%
C117-C118	157E-476M-5-IU	CE 25V 47µF 20%
C119-C122	153I-474K-9-NL	CM 63V 0.47µF 10%
C125-C128	157E-476M-5-IU	CE 25V 47µF 20%
C129-C130	153F-183J-5-KP	CM 50V 0.018µF 5%
C131-C132	153I-104J-9-NL	CM 63V 0.1µF 5%
C133-C134	153F-822J-5-KW	CM 50V 8200pF 5%
C135-C136	153F-124J-5-SY	CM 50V 0.12µF 5%
C137-C138	153I-684J-9-NO	CM 63V 0.68µF 5%
C139-C140	157E-475M-5-IU	CE 25V 4.7µF 20%
C143	153I-104J-9-NL	CM 63V 0.1µF 5%
C203-C204	157E-106M-5-IU	CE 25V 10µF 20%
C205-C206	157E-107M-5-KW	CE 25V 100µF 20%
C207-C208	157F-108M-5-W9	CE 50V 1000µF 20%
C211-C212	157E-476M-5-IU	CE 25V 47µF 20%
C213-C214	157F-105M-5-IU	CE 50V 1µF 20%
C215-C216	157I-227M-5-S9	CE 63V 220µF 20%
C217-C218	153I-104J-9-NL	CM 63V 0.1µF 5%
C221-C222	153I-332J-9-NL	CM 63V 3300pF 5%
C223-C224	8910-0057-0	CE 63V 4700µF 20%
C227-C228	157I-106M-5-IU	CE 63V 10µF 20%
C231-C232	157D-107M-5-IU	CE 16V 100µF 20%
C405-C408	157D-475M-5-IU	CE 16V 4.7µF 20%
C701	1551-0210-0	TRIMCAP 5.2-30pF TZ03R300FR
C703	157B-107M-5-KM	CE 6.3V 100µF 20%
C704	157F-107M-5-OW	CE 50V 100µF 20%
C705	157F-335M-5-IU	CE 50V 3.3µF 20%
C706	153I-104J-9-NL	CM 63V 0.1µF 5%
C707,C709	157Q-474M-5-IU	CE 35V 0.47µF 20%
C711	158F-101J-5-KW	CP 50V 100pF 5%
C712	157D-106M-5-IU	CE 16V 10µF 20%
C721	1551-0210-0	TRIMCAP 5.2-30pF TZ03R300FR
C725	157D-106M-5-IU	CE 16V 10µF 20%
C726	157D-475M-5-IU	CE 16V 4.7µF 20%
C733,C338	157F-335M-5-IU	CE 50V 3.3µF 20%
C739	158F-101J-5-KW	CP 50V 100pF 5%
C741	157D-107M-5-KW	CE 16V 100µF 20%
C742	157F-104M-5-IU	CE 50V 0.1µF 20%
C743	157D-106M-5-IU	CE 16V 10µF 20%
C744	158F-391J-5-KW	CP 50V 390pF 5%
C745	157D-476M-5-IU	CE 16V 47µF 20%
C746	157D-107M-5-KW	CE 16V 100µF 20%
C747	157F-105M-5-IU	CE 50V 1µF 20%
C748	157F-224M-5-IU	CE 50V 0.22µF 20%
C749-C750	157F-105M-5-IU	CE 50V 1µF 20%
C751	157D-106M-5-IU	CE 16V 10µF 20%
C752-C753*AH	158F-911J-5-KW	CP 50V 910pF 5%
C752-C753*B,C	158E-421J-5-IQ	CP 25V 420pF 5%
C754-C755	153F-152J-5-KW	CM 50V 1500pF 5%
C756-C757	157D-476M-5-IU	CE 16V 47µF 20%
C932	15CH-390J-5-IG	CC 50V 39pF 5% NPO

Reference No	Part Number	Description
DIODES		
D5-D7	4804-1480-2	DIODE 1N4148
D101-D102	4837-24B4-2	DIODE ZENER 1/2W 23.81-24.81V
D201-D204	4804-1480-2	DIODE 1N4148
D205-D206	4804-0010-2	DIODE 1N4001
D207-D208	4837-3B20-2	DIODE ZENER 1/2W 3.8-4.0V
D209-D303	4804-1480-2	DIODE 1N4148
D701-D702	4801-N60P-1	GERMANIUM DIODE 1N60P
D703-D704	484C-321D-5	SVC321-D AM CAR. DIODE
ZD201-ZD202	4837-8A30-2	DIODE ZENER 1/2W 9.9-10.3V
FILTERS		
L702*B,C	2701-0609-4	BPF BPEB1
FL1-FL3*AH	2701-0546-1-0	CF SFE 10.7ML-A
FL1-FL3*B,C	2701-0556-1-0	CF SFE 10.7MZ2-A
FL706	2701-0066-0	CF SFZ450G
ICS		
IC701	3130-3430-0	IC LM7000 DTS
IC702*AH	8910-0034-0	TUNER MODULE FE407-A16
IC702*B,C	1300-0606-0	TUNER MODULE FE407-G58
IC703	3130-3390-0	IC LA1266 FM/AM TUNER
IC704	3130-3400-0	IC LA3401 PLL MPX
COILS		
L201-L202	1804-0540-0	SPRING COIL 1µH
L701,L703	1801-2R2M-M	INDUCTOR 2.2µH 20%
L704	5600-2276-S	AM RF COIL
L705	5600-2286-S	AM OSC COIL
L706	5600-2256-S	FM QUAD COIL PRIMARY
L707	5600-2266-S	FM QUAD COIL SECONDARY
L708	5600-2246-S	AM IF COIL
L710	1801-680M-M	INDUCTOR 68µH 20%
FL401-FL402	5600-2236-S	19KHZ FILTER COIL
FL703	5600-2296-S	114KHZ FILTER COIL
TRANSISTORS		
Q5-Q9	485C-930E-5	TR 2SC930E HFE 100-200
Q10-Q12	4860-0700-5	TR 2SC1815GR
Q23-Q24	4860-0700-5	TR 2SC1815GR
Q25	4860-0660-5	TR 2SA1015GR
Q101-Q102	4852-40GR-5	TR 2SC2240GR
Q103-Q104	4860-0650-5	TR 2SA970GR
Q201-Q202	4852-40GR-5	TR 2SC2240GR
Q203-Q204	4860-0650-5	TR 2SA970GR
Q205-Q206	4852-40GR-5	TR 2SC2240GR
Q207-Q208	4860-1050-5	TR 2SA1837 HFE 100-320
Q209-Q210	4860-1220-5	TR 2SC3421 (0,Y)
Q211-Q212	4860-1420-5	MOS FET BUK555-60B
Q213-Q214	4860-1460-5	TR 2SB817E HFE 100-200
Q215-Q218	4860-0650-5	TR 2SA970GR
Q219-Q220	4852-40GR-5	TR 2SC2240GR
Q221-Q222	4860-0650-5	TR 2SA970GR
Q223-Q224	4852-40GR-5	TR 2SC2240GR
Q300-Q301	4860-0870-5	TR 2SB631K (E,F)
Q401-Q404	4860-0700-5	TR 2SC1815GR
Q701-Q703	4860-0700-5	TR 2SC1815GR
Q704,Q714	4860-0660-5	TR 2SA1015GR

Reference No		Part Number	Description
RESISTORS			
R18*AH		4705-221J-2	RCF 220 OHM 1/4W 5%
R18*B,C		4705-331J-2	RCF 330 OHM 1/4W 5%
R19*AH		4705-331J-2	RCF 330 OHM 1/4W 5%
R19*B,C		4705-361J-2	RCF 360 OHM 1/4W 5%
R20*AH		4705-750J-2	RCF 75 OHM 1/4W 5%
R20*B,C		4705-390J-2	RCF 39 OHM 1/4W 5%
R25*AH		4705-221J-2	RCF 220 OHM 1/4W 5%
R25*B,C		4705-511J-2	RCF 510 OHM 1/4W 5%
R28,R33	⚠	4715-100J-2-F	RFU 10 OHM 1/4W 5%
R35*AH		4705-221J-2	RCF 220 OHM 1/4W 5%
R35*B,C		4705-511J-2	RCF 510 OHM 1/4W 5%
R162	⚠	4715-100J-2-F	RFU 10 OHM 1/4W 5%
R229-R230	⚠	4715-101J-2-F	RFU 100 OHM 1/4W 5%
R245-R246	⚠	474B-0R1J-5	RCE 0.1 OHM 5W 5%
R301		8910-0031-0	T.S-110 PTH9M04BC471TS2F
R707	⚠	4715-470J-2-F	RFU 47 OHM 1/4W 5%
R752	⚠	4715-100J-2-F	RFU 10 OHM 1/4W 5%
R756-R757*AH		4705-823J-2	RCF 82K OHM 1/4W 5%
R756-R757*B,C		4705-124J-2	RCF 120K OHM 1/4W 5%
VARIABLE RESISTORS			
R736		4756-2240-3-11	SVR 220K H3
R736A		4756-1040-3-11	SVR 100K H3
R753		4756-3330-3-11	SVR 33K H3
RV201-RV202		4756-1016-3-06	SVR 100R H6
RESONATORS			
X102		2703-0020-0	CR RESONATOR CSB 456F11
X701		2300-0440-0	CRYSTAL 7.2MHZ 20PPM
PSU ASSEMBLY			
PC BOARD			
*AH		MI-21870B-01-S	PSU ASSEMBLY
*B,C		MI-21870B-02-S	PSU ASSEMBLY
CAPACITORS			
C1	⚠	8910-0049-0	CAP400V 4700pF DE7150F472MVA1KC
C65		157E-477Z-5-S5	CE 25V 470µF +80/-20%
C66		153I-104J-9-NL	CM 63V 0.1µF 5%
C68		157F-337M-5-S9	CE 50V 330µF 20%
C69		157F-106M-5-IU	CE 50V 10µF 20%
C70-C71		157E-228M-5-X9	CE 25V 2200µF 20%
C72-C73		153I-104J-9-NL	CM 63V 0.1µF 5%
C74		157D-106M-5-IU	CE 16V 10µF 20%
C75		157F-337M-5-S9	CE 50V 330µF 20%
C301-C302		8910-0057-0	CE 63V 4700µF 20%
DIODES			
D10		4840-0490-0	BRIDGE RECTIFIER RB152 100V 1.5A
D11-D12		4804-0010-2	DIODE 1N4001
D13		4837-7V51-2	DIODE ZENER 1/2W 7.5V
BD301-BD302		4840-1120-0	BRIDGE DIODE RS203L

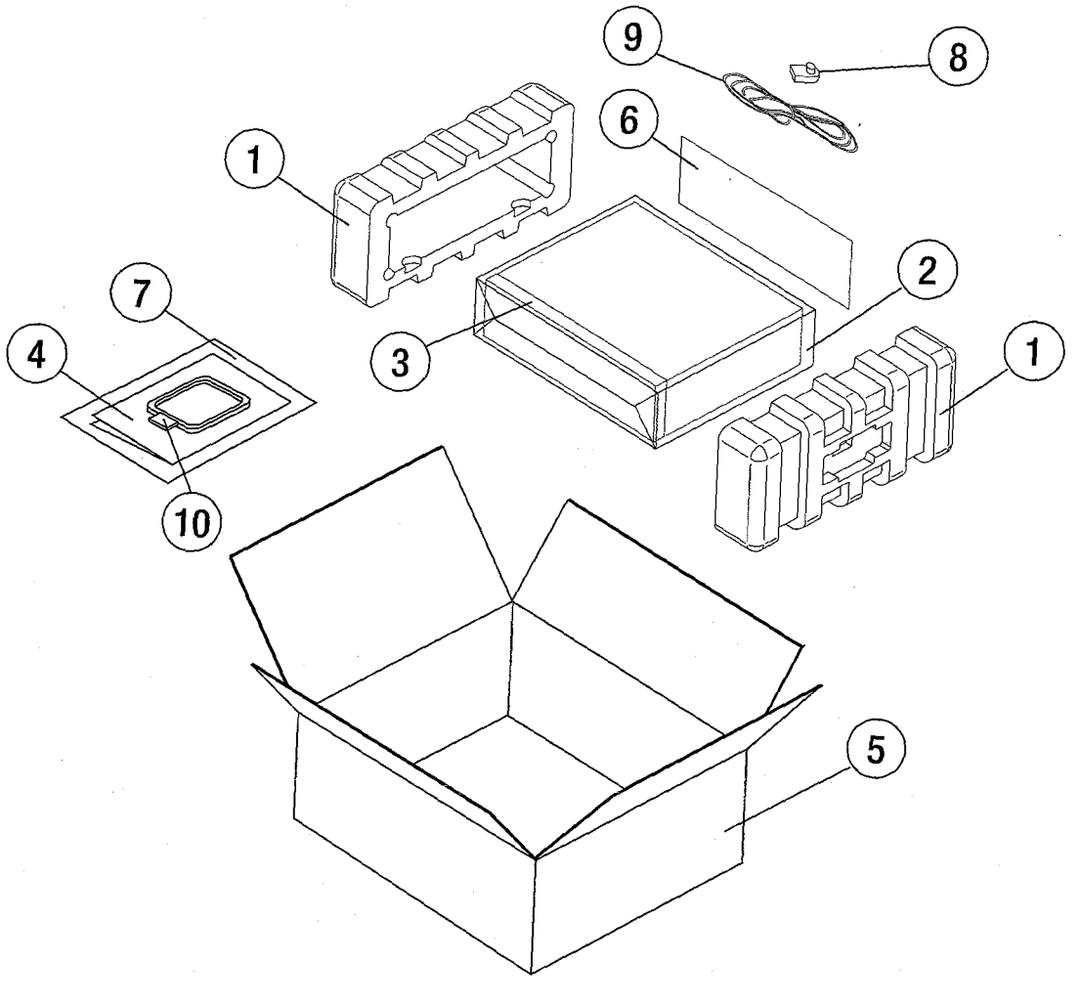
Reference No		Part Number	Description
FUSES			
F301-F302*AH	⚠	5120-0037-0	FUSE 3.15A 250V TIME LAG LBC UL/CSA
F301-F302*B,C	⚠	5120-0024-0	FUSE 3.15A 250V SLOW BLOW LBC VDE/SEMKO
F303-F304*AH	⚠	5100-5010-1A	FUSE 500mA 250V TIME LAG LBC UL/CSA
F303-F304*B,C	⚠	5100-5010-1B	FUSE 500mA 250V SLOW BLOW LBC VDE/SEMKO
ICS			
Q16		3130-2020-3	IC 7805 5V REGULATOR
Q18		3130-2520-2	IC 7812H 12V REGULATOR
Q19		3130-3800-0	IC UPC79M12HF -12V REGULATOR
Q17		3130-4810-0	IC LM78L24 24V REGULATOR
RESISTORS			
R76	⚠	4717-100J-1-P	RFP 10 OHM 1/2W 5%
R77*AH	⚠	4717-275J-2-S	RAS 2.7M OHM 1/2W 5% UL

NOTE : – The components identified by ⚠ mark are critical for risk of fire and electrical shock. Replace only with part number specified.

– <*AH > : USA, Canadian model only.
<*B > : UK model only.
<*C > : European model only.

– Capacitors : CP - Polystyrere, CM - Mylar, CE - Electrolytic, CC - Ceramic.
– Resistors : RCF - Carbon Film, RFU - Fusible, RCE - Ceramic Case, RFP - Flame Proof, RMF - Metal Film, RAS - Anti-Surge.

PACKING DIAGRAM



PACKING LIST

Item	Part No	Description	Qty
1	1490-2643-0	POLYFOAM END CAP	2
2	1497-1332-1	UNIT POLYBAG	1
3	1497-1442-0	FASCIA COVER	1
4	4301-3670-0	INSTRUCTION MANUAL	1
5	1476-5301-0	CARTON BOX	1
6	1497-1302-0	ACCESSORIES POLYBAG	1
7	1497-1062-0	MANUAL POLYBAG	1
8*AH	2103-6101-0	RF CONNECTOR PLUG F-Type	1
8*B,*C	2103-6201-0	RF CONNECTOR PLUG DIN-Type	1
9	2107-0661-1	300-OHM T ANTENNA	1
10	2113-1155-0	AM LOOP ANTENNA	1

NOTE : **<*AH > : USA, Canadian model only.**
<*B > : UK model only.
<*C > : European model only.